

**Abstract of the Disclosur**

Disclosed are a cleaning solution and a method of cleaning a semiconductor substrate using the same without damaging the substrate. The cleaning solution includes from about 10% to about 35% by weight of hydrogen fluoride (HF), from about 10% to about 35% by weight of ammonium fluoride (NH<sub>4</sub>F) and from about 30% to about 80% by weight of de-ionized water (H<sub>2</sub>O). A nitride layer at a side or bottom portion of the substrate, or on a control substrate can be rapidly removed using the cleaning solution.